

What Is Claimed Is:

1. A composition comprising a first oligomer and a second oligomer, wherein:
at least a portion of said first oligomer is capable of hybridizing with at least a portion of said second oligomer,
at least a portion of first oligomer is complementary to and capable of hybridizing to a selected target nucleic acid, and
at least one of said first or said second oligomers is a chimeric oligomeric compound.
2. The composition of claim 1 wherein said first and said second oligomers are a complementary pair of siRNA oligomers.
3. The composition of claim 1 wherein said first and said second oligomers are an antisense/sense pair of oligomers.
4. The composition of claim 1 wherein each of said first and second oligomers has 12 to 50 nucleotides.
5. The composition of claim 1 wherein each of said first and second oligomers has 15 to 30 nucleotides.
6. The composition of claim 1 wherein each of said first and second oligomers has 21 to 24 nucleotides.
7. The composition of claim 1 wherein said first oligomer is an antisense oligomer.
8. The composition of claim 7 wherein said second oligomer is a sense oligomer.
9. The composition of claim 7 wherein said second oligomer has a plurality of ribose nucleotide units.

10. The composition of claim 1 wherein said first oligomer is a chimeric oligomeric compound.
11. The composition of claim 1 wherein said chimeric oligomeric compound is a gapmer, an inverted gapmer, a 3'-hemimer, a 5'-hemimer or a blockmer.
12. The composition of claim 11 wherein the chimeric oligomeric compound comprises at least two of DNA, RNA, PNA segments, and mixtures thereof.
13. The composition of claim 11 wherein said chimeric oligomeric compound is a gapmer.
14. The composition of claim 13 wherein said gapmer comprises two terminal RNA segments having nucleotides of a first type and an internal RNA segment having nucleotides of a second type and where said nucleotides of said first type are different from said nucleotides of said second type.
15. The composition of claim 14 wherein each of said nucleotides of said first type independently including at least one sugar substituent;
said sugar substituent comprising halogen, amino, trifluoroalkyl, trifluoroalkoxy, azido, aminooxy, alkyl, alkenyl, alkynyl, O-, S-, or N(R*)-alkyl; O-, S-, or N(R*)-alkenyl; O-, S- or N(R*)-alkynyl; O-, S- or N-aryl, O-, S-, or N(R*)-aralkyl;
wherein said alkyl, alkenyl, alkynyl, aryl and aralkyl may be substituted or unsubstituted C₁ to C₁₀ alkyl, C₂ to C₁₀ alkenyl, C₂ to C₁₀ alkynyl, C₅-C₂₀ aryl or C₆-C₂₀ aralkyl; and said substituted C₁ to C₁₀ alkyl, C₂ to C₁₀ alkenyl, C₂ to C₁₀ alkynyl, C₅-C₂₀ aryl or C₆-C₂₀ aralkyl comprising substitution with alkoxy, thioalkoxy, phthalimido, halogen, amino, keto, carboxyl, nitro, nitroso, cyano, trifluoromethyl, trifluoromethoxy, imidazole, azido, hydrazino, aminooxy, isocyanato, sulfoxide, sulfone, disulfide, silyl, heterocycle, carbocycle, an intercalator, a reporter group, a conjugate, a polyamine, a polyamide, a polyalkylene glycol, or a polyether of the formula (-O-alkyl)_m, where m is 1 to about 10; and R* is hydrogen, or a protecting group.
16. The composition of claim 11 wherein said chimeric oligomeric compound is an inverted gapmer.

17. The composition of claim 16 wherein said inverted gapmer comprises two terminal RNA segments having nucleotides of a second type and an internal RNA segment having nucleotides of a first type and where said nucleotides of said first type are different from said nucleotides of said second type.

18. The composition of claim 17 wherein each of said nucleotides of said first type independently including at least one sugar substituent;

said sugar substituent comprising halogen, amino, trifluoroalkyl, trifluoroalkoxy, azido, aminooxy, alkyl, alkenyl, alkynyl, O-, S-, or N(R*)-alkyl; O-, S-, or N(R*)-alkenyl; O-, S- or N(R*)-alkynyl; O-, S- or N-aryl, O-, S-, or N(R*)-aralkyl;

wherein said alkyl, alkenyl, alkynyl, aryl and aralkyl may be substituted or unsubstituted C₁ to C₁₀ alkyl, C₂ to C₁₀ alkenyl, C₂ to C₁₀ alkynyl, C₅-C₂₀ aryl or C₆-C₂₀ aralkyl; and said substituted C₁ to C₁₀ alkyl, C₂ to C₁₀ alkenyl, C₂ to C₁₀ alkynyl, C₅-C₂₀ aryl or C₆-C₂₀ aralkyl comprising substitution with alkoxy, thioalkoxy, phthalimido, halogen, amino, keto, carboxyl, nitro, nitroso, cyano, trifluoromethyl, trifluoromethoxy, imidazole, azido, hydrazino, aminooxy, isocyanato, sulfoxide, sulfone, disulfide, silyl, heterocycle, carbocycle, an intercalator, a reporter group, a conjugate, a polyamine, a polyamide, a polyalkylene glycol, or a polyether of the formula (-O-alkyl)_m, where m is 1 to about 10; and R* is hydrogen, or a protecting group.

19. The composition of claim 11 wherein said chimeric oligomeric compound is 3'-hemimer.

20. The composition of claim 19 wherein said 3'-hemimer comprises a terminal RNA segment having nucleotides of a first type and a further RNA segment having nucleotides of a second type and where said nucleotides of said first type are different from said nucleotides of said second type.

21. The composition of claim 20 wherein each of said nucleotides of said first type independently including at least one sugar substituent;

said sugar substituent comprising halogen, amino, trifluoroalkyl, trifluoroalkoxy, azido, aminooxy, alkyl, alkenyl, alkynyl, O-, S-, or N(R*)-alkyl; O-, S-, or N(R*)-alkenyl; O-, S- or N(R*)-alkynyl; O-, S- or N-aryl, O-, S-, or N(R*)-aralkyl;

wherein said alkyl, alkenyl, alkynyl, aryl and aralkyl may be substituted or unsubstituted C₁ to C₁₀ alkyl, C₂ to C₁₀ alkenyl, C₂ to C₁₀ alkynyl, C₅-C₂₀ aryl or C₆-C₂₀ aralkyl; and said substituted C₁ to C₁₀ alkyl, C₂ to C₁₀ alkenyl, C₂ to C₁₀ alkynyl, C₅-C₂₀ aryl or C₆-C₂₀ aralkyl comprising substitution with alkoxy, thioalkoxy, phthalimido, halogen, amino, keto, carboxyl, nitro, nitroso, cyano, trifluoromethyl, trifluoromethoxy, imidazole, azido, hydrazino, aminooxy, isocyanato, sulfoxide, sulfone, disulfide, silyl, heterocycle, carbocycle, an intercalator, a reporter group, a conjugate, a polyamine, a polyamide, a polyalkylene glycol, or a polyether of the formula (-O-alkyl)_m, where m is 1 to about 10; and R* is hydrogen, or a protecting group.

22. The composition of claim 11 wherein said chimeric oligomeric compound is 5'-hemimer.

23. The composition of claim 22 wherein said 5'-hemimer comprises a terminal RNA segment having nucleotides of a first type and a further RNA segment having nucleotides of a second type and where said nucleotides of said first type are different from said nucleotides of said second type.

24. The composition of claim 23 wherein each of said nucleotides of said first type independently including at least one sugar substituent;

said sugar substituent comprising halogen, amino, trifluoroalkyl, trifluoroalkoxy, azido, aminooxy, alkyl, alkenyl, alkynyl, O-, S-, or N(R*)-alkyl; O-, S-, or N(R*)-alkenyl; O-, S- or N(R*)-alkynyl; O-, S- or N-aryl, O-, S-, or N(R*)-aralkyl;

wherein said alkyl, alkenyl, alkynyl, aryl and aralkyl may be substituted or unsubstituted C₁ to C₁₀ alkyl, C₂ to C₁₀ alkenyl, C₂ to C₁₀ alkynyl, C₅-C₂₀ aryl or C₆-C₂₀ aralkyl; and said substituted C₁ to C₁₀ alkyl, C₂ to C₁₀ alkenyl, C₂ to C₁₀ alkynyl, C₅-C₂₀ aryl or C₆-C₂₀ aralkyl comprising substitution with alkoxy, thioalkoxy, phthalimido, halogen, amino, keto, carboxyl, nitro, nitroso, cyano, trifluoromethyl, trifluoromethoxy, imidazole, azido, hydrazino, aminooxy, isocyanato, sulfoxide, sulfone, disulfide, silyl, heterocycle, carbocycle, an intercalator, a reporter group, a conjugate, a polyamine, a polyamide, a polyalkylene glycol, or a polyether of the formula (-O-alkyl)_m, where m is 1 to about 10; and R* is hydrogen, or a protecting group.

25. The composition of claim 11 wherein the chimeric oligomeric compound comprises a blockmer.

26. The composition of claim 25 wherein said blockmer comprises an oligonucleotide having a block of at least two consecutive nucleotides of a first type located immediately adjacent at least one nucleotide of a second type and

where said nucleotides of said first type are different from said nucleotides of said second type.

27. The composition of claim 26 wherein each of said nucleotides of said first type independently including at least one sugar substituent;

said sugar substituent comprising halogen, amino, trifluoroalkyl, trifluoroalkoxy, azido, aminooxy, alkyl, alkenyl, alkynyl, O-, S-, or N(R*)-alkyl; O-, S-, or N(R*)-alkenyl; O-, S- or N(R*)-alkynyl; O-, S- or N-aryl, O-, S-, or N(R*)-aralkyl; wherein said alkyl, alkenyl, alkynyl, aryl and aralkyl may be substituted or unsubstituted C₁ to C₁₀ alkyl, C₂ to C₁₀ alkenyl, C₂ to C₁₀ alkynyl, C₅-C₂₀ aryl or C₆-C₂₀ aralkyl; and said substituted C₁ to C₁₀ alkyl, C₂ to C₁₀ alkenyl, C₂ to C₁₀ alkynyl, C₅-C₂₀ aryl or C₆-C₂₀ aralkyl comprising substitution with alkoxy, thioalkoxy, phthalimido, halogen, amino, keto, carboxyl, nitro, nitroso, cyano, trifluoromethyl, trifluoromethoxy, imidazole, azido, hydrazino, aminooxy, isocyanato, sulfoxide, sulfone, disulfide, silyl, heterocycle, carbocycle, an intercalator, a reporter group, a conjugate, a polyamine, a polyamide, a polyalkylene glycol, or a polyether of the formula (-O-alkyl)_m, where m is 1 to about 10; and R* is hydrogen, or a protecting group.

28. The composition of claim 27 wherein said nucleotides of said of said second type comprise 2'-OH nucleotides.

29. The composition of claim 26 further including a plurality of blocks of at least two consecutive nucleotides of a first type and wherein each of said blocks of nucleotides of said first type is separated from others of said blocks of nucleotides of said first type by a nucleotide of said second type.

30. The composition of claim 11 wherein said chimeric oligomer compound comprises a gapmer of the formula PNA-RNA-PNA.

31. The composition of claim 17 wherein said chimeric oligomeric compound comprises a 5'-hemimer the formula PNA-RNA or a 3'-hemimer of the formula RNA-PNA.

32. The composition of claim 11 wherein said chimeric oligomeric compound comprises an inverted gapmer of the formula RNA-PNA-RNA.

33. The composition of claim 11 wherein the chimeric oligomeric compound is divided into at least two regions;

the first region comprising α -nucleosides linked by charged or neutral 3'-5' phosphorous linkages; α -nucleosides linked by charged or neutral 2'-5' phosphorous linkages; α -nucleosides linked by non-phosphorous linkages; 4'-thionucleosides linked by charged or neutral 3'-5' phosphorous linkages; 4'-thionucleosides linked by charged or neutral 2'-5' phosphorous linkages; 4'-thionucleosides linked by non-phosphorous linkages; carbocyclic-nucleosides linked by charged or neutral 3'-5' phosphorous linkages; carbocyclic-nucleosides linked by charged or neutral 2'-5' phosphorous linkages; carbocyclic-nucleosides linked by non-phosphorous linkages; β -nucleosides linked by charged or neutral 3'-5' linkages; β -nucleosides linked by charged or neutral 2'-5' linkages; or β -nucleosides linked by non-phosphorous linkages; and

the second region consists of 2'-ribo- β -nucleosides linked by charged 3'-5' phosphorous linkages.

34. The composition of claim 11 wherein the chimeric oligomeric compound is divided into at least two regions;

the first region comprising α -nucleosides linked by charged or neutral 3'-5' phosphorous linkages, α -nucleosides linked by charged or neutral 2'-5' phosphorous linkages, α -nucleosides linked by non-phosphorous linkages, 4'-thionucleosides linked by charged or neutral 3'-5' phosphorous linkages, 4'-thionucleosides linked by charged or neutral 2'-5' phosphorous linkages, 4'-thionucleosides linked by non-phosphorous linkages, carbocyclic-nucleosides linked by charged or neutral phosphorous linkages, carbocyclic-nucleosides linked by non-phosphorous linkages, β -nucleosides linked by charged or neutral 3'-5' linkages, β -nucleosides linked by charged or neutral 2'-5' linkages, or β -nucleosides linked by non-phosphorous linkages; and

the second region comprising nucleobases linked by non-phosphorous linkages or nucleobases that are attached to phosphate linkages via a non-sugar tethering moiety.

35. The composition of claim 11 wherein the chimeric oligomeric compound is divided into at least two regions;

the first region comprising nucleobases linked by non-phosphorous linkages and nucleobases that are attached to phosphate linkages via non-sugar tethering groups, and nucleosides selected from α -nucleosides linked by charged or neutral 3'-5' phosphorous linkages, α -nucleosides linked by charged or neutral 2'-5' phosphorous linkages, α -nucleosides linked by non-phosphorous linkages, 4'-thionucleosides linked by charged or neutral 3'-5' phosphorous linkages, 4'-thionucleosides linked by charged or neutral 2'-5' phosphorous linkages, 4'-thionucleosides linked by non-phosphorous linkages, carbocyclic-nucleosides linked by charged or neutral 3'-5' phosphorous linkages, carbocyclic-nucleosides linked by charged or neutral 2'-5' phosphorous linkages, carbocyclic-nucleosides linked by non-phosphorous linkages, β -nucleosides linked by charged or neutral 3'-5' linkages; β -nucleosides linked by charged or neutral 2'-5' linkages, or β -nucleosides linked by non-phosphorous linkages; and

the second region comprising 2'-ribo- β -nucleosides linked by charged 3'-5' phosphorous linkages wherein the 3'-5' phosphorous linkages.

36. The composition of claim 11 comprising at least two segments, wherein at least one segment comprises non-naturally occurring internucleoside linkages.

37. The composition of claim 1 wherein the chimeric oligomeric compound comprises an oligomer mimetic.

38. The composition of claim 14 wherein said nucleotides of said first type comprise nucleotides having a 2' halogen sugar substituent and said halogen is F.

39. The composition of claim 14 said nucleotides of said first type comprise nucleotides having a 2' O-alkyl sugar substituent and wherein said -O-alkyl is -O-CH₃.

40. The composition of claim 14 said nucleotides of said first type comprise nucleotides having a 2' sugar substituent and where said 2' sugar substituent is of the formula -X-Y, wherein:

X is O, S, NR^{**}, or CR^{*} wherein each R^{**} is independently H or C₁₋₆ alkyl; and

Y is substituted or unsubstituted C₁₋₂₀ alkyl, substituted or unsubstituted C₂₋₂₀ alkenyl, or substituted or unsubstituted C₆₋₂₀ aryl.

41. The composition of claim 17 wherein said nucleotides of said first type comprise nucleotides having a 2' halogen sugar substituent and said halogen is F.

42. The composition of claim 17 said nucleotides of said first type comprise nucleotides having a 2' O-alkyl sugar substituent and wherein said -O-alkyl is -O-CH₃.

43. The composition of claim 17 said nucleotides of said first type comprise nucleotides having a 2' sugar substituent and where said 2' sugar substituent is of the formula -X-Y, wherein:

X is O, S, NR^{**}, or CR^{*} wherein each R^{**} is independently H or C₁₋₆ alkyl; and

Y is substituted or unsubstituted C₁₋₂₀ alkyl, substituted or unsubstituted C₂₋₂₀ alkenyl, or substituted or unsubstituted C₆₋₂₀ aryl.

44. The composition of claim 20 wherein said nucleotides of said first type comprise nucleotides having a 2' halogen sugar substituent and said halogen is F.

45. The composition of claim 20 said nucleotides of said first type comprise nucleotides having a 2' O-alkyl sugar substituent and said -O-alkyl is -O-CH₃.

46. The composition of claim 20 said nucleotides of said first type comprise nucleotides having a 2' sugar substituent and where said 2' sugar substituent is of the formula -X-Y, wherein:

X is O, S, NR^{**}, or CR^{*} wherein each R^{**} is independently H or C₁₋₆ alkyl; and

Y is substituted or unsubstituted C₁₋₂₀ alkyl, substituted or unsubstituted C₂₋₂₀ alkenyl, or substituted or unsubstituted C₆₋₂₀ aryl.

47. The composition of claim 23 wherein said nucleotides of said first type comprise nucleotides having a 2' halogen sugar substituent and said halogen is F.

48. The composition of claim 23 said nucleotides of said first type comprise nucleotides having a 2' O-alkyl sugar substituent and said -O-alkyl is -O-CH₃.

49. The composition of claim 23 said nucleotides of said first type comprise nucleotides having a 2' sugar substituent and where said 2' sugar substituent is of the formula $-X-Y$, wherein:

X is O, S, NR^{**} , or CR^* wherein each R^{**} is independently H or C_{1-6} alkyl; and

Y is substituted or unsubstituted C_{1-20} alkyl, substituted or unsubstituted C_{2-20} alkenyl, or substituted or unsubstituted C_{6-20} aryl.

50. The composition of claim 26 wherein said nucleotides of said first type comprise nucleotides having a 2' halogen sugar substituent and said halogen is F.

51. The composition of claim 26 said nucleotides of said first type comprise nucleotides having a 2' O-alkyl sugar substituent and said -O-alkyl is $-O-CH_3$.

52. The composition of claim 26 said nucleotides of said first type comprise nucleotides having a 2' sugar substituent and where said 2' sugar substituent is of the formula $-X-Y$, wherein:

X is O, S, NR^{**} , or CR^* wherein each R^{**} is independently H or C_{1-6} alkyl; and

Y is substituted or unsubstituted C_{1-20} alkyl, substituted or unsubstituted C_{2-20} alkenyl, or substituted or unsubstituted C_{6-20} aryl.

53. A composition comprising an oligomer complementary to and capable of hybridizing to a selected target nucleic acid and at least one protein, said protein comprising at least a portion of a RNA-induced silencing complex (RISC), wherein said oligomer is a chimeric oligomeric compound.

54. The composition of claim 53 herein said oligomer is an antisense oligomer.

55. The composition of claim 53 herein said oligomer has 12 to 50 nucleotides.

56. The composition of claim 55 herein said oligomer has 15 to 30 nucleotides.

57. The composition of claim 56 herein said oligomer has 21 to 24 nucleotides.

58. The composition of claim 53 including a further oligomer, wherein said further oligomer is complementary to and hybridizable to said oligomer.
59. The composition of claim 58 wherein said further oligomer is a sense oligomer.
60. The composition of claim 58 wherein said further oligomer is an oligomer having a plurality of ribose nucleotide units.
61. The composition of claim 53 wherein said first oligomer is a chimeric oligomeric compound.
62. The composition of claim 53 wherein said chimeric oligomeric compound is a gapmer, an inverted gapmer, a 3'-hemimer, a 5'-hemimer or a blockmer.
63. The composition of claim 62 wherein the chimeric oligomeric compound comprises at least two of DNA, RNA, PNA segments, and mixtures thereof.
64. The composition of claim 62 wherein said chimeric oligomeric compound is a gapmer.
65. The composition of claim 64 wherein said gapmer comprises two terminal RNA segments having nucleotides of a first type and an internal RNA segment having nucleotides of a second type and where said nucleotides of said first type are different from said nucleotides of said second type.
66. The composition of claim 65 wherein each of said nucleotides of said first type independently including at least one sugar substituent;
said sugar substituent comprising halogen, amino, trifluoroalkyl, trifluoroalkoxy, azido, aminooxy, alkyl, alkenyl, alkynyl, O-, S-, or N(R*)-alkyl; O-, S-, or N(R*)-alkenyl; O-, S- or N(R*)-alkynyl; O-, S- or N-aryl, O-, S-, or N(R*)-aralkyl;
wherein said alkyl, alkenyl, alkynyl, aryl and aralkyl may be substituted or unsubstituted C₁ to C₁₀ alkyl, C₂ to C₁₀ alkenyl, C₂ to C₁₀ alkynyl, C₅-C₂₀ aryl or C₆-C₂₀ aralkyl; and said substituted C₁ to C₁₀ alkyl, C₂ to C₁₀ alkenyl, C₂ to C₁₀ alkynyl, C₅-C₂₀ aryl or C₆-C₂₀ aralkyl

comprising substitution with alkoxy, thioalkoxy, phthalimido, halogen, amino, keto, carboxyl, nitro, nitroso, cyano, trifluoromethyl, trifluoromethoxy, imidazole, azido, hydrazino, aminooxy, isocyanato, sulfoxide, sulfone, disulfide, silyl, heterocycle, carbocycle, an intercalator, a reporter group, a conjugate, a polyamine, a polyamide, a polyalkylene glycol, or a polyether of the formula $(-O\text{-alkyl})_m$, where m is 1 to about 10; and R^* is hydrogen, or a protecting group.

67. The composition of claim 62 wherein said chimeric oligomeric compound is an inverted gapmer.

68. The composition of claim 67 wherein said inverted gapmer comprises two terminal RNA segments having nucleotides of a second type and an internal RNA segment having nucleotides of a first type and where said nucleotides of said first type are different from said nucleotides of said second type.

69. The composition of claim 68 wherein each of said nucleotides of said first type independently including at least one sugar substituent;

said sugar substituent comprising halogen, amino, trifluoroalkyl, trifluoroalkoxy, azido, aminooxy, alkyl, alkenyl, alkynyl, O-, S-, or N(R^*)-alkyl; O-, S-, or N(R^*)-alkenyl; O-, S- or N(R^*)-alkynyl; O-, S- or N-aryl, O-, S-, or N(R^*)-aralkyl;

wherein said alkyl, alkenyl, alkynyl, aryl and aralkyl may be substituted or unsubstituted C_1 to C_{10} alkyl, C_2 to C_{10} alkenyl, C_2 to C_{10} alkynyl, C_5 - C_{20} aryl or C_6 - C_{20} aralkyl; and said substituted C_1 to C_{10} alkyl, C_2 to C_{10} alkenyl, C_2 to C_{10} alkynyl, C_5 - C_{20} aryl or C_6 - C_{20} aralkyl comprising substitution with alkoxy, thioalkoxy, phthalimido, halogen, amino, keto, carboxyl, nitro, nitroso, cyano, trifluoromethyl, trifluoromethoxy, imidazole, azido, hydrazino, aminooxy, isocyanato, sulfoxide, sulfone, disulfide, silyl, heterocycle, carbocycle, an intercalator, a reporter group, a conjugate, a polyamine, a polyamide, a polyalkylene glycol, or a polyether of the formula $(-O\text{-alkyl})_m$, where m is 1 to about 10; and R^* is hydrogen, or a protecting group.

70. The composition of claim 62 wherein said chimeric oligomeric compound is 3'-hemimer.

71. The composition of claim 70 wherein said 3'-hemimer comprises a terminal RNA segment having nucleotides of a first type and a further RNA segment having nucleotides of a

second type and where said nucleotides of said first type are different from said nucleotides of said second type.

72. The composition of claim 71 wherein each of said nucleotides of said first type independently including at least one sugar substituent;

said sugar substituent comprising halogen, amino, trifluoroalkyl, trifluoroalkoxy, azido, aminooxy, alkyl, alkenyl, alkynyl, O-, S-, or N(R*)-alkyl; O-, S-, or N(R*)-alkenyl; O-, S- or N(R*)-alkynyl; O-, S- or N-aryl, O-, S-, or N(R*)-aralkyl;

wherein said alkyl, alkenyl, alkynyl, aryl and aralkyl may be substituted or unsubstituted C₁ to C₁₀ alkyl, C₂ to C₁₀ alkenyl, C₂ to C₁₀ alkynyl, C₅-C₂₀ aryl or C₆-C₂₀ aralkyl; and said substituted C₁ to C₁₀ alkyl, C₂ to C₁₀ alkenyl, C₂ to C₁₀ alkynyl, C₅-C₂₀ aryl or C₆-C₂₀ aralkyl comprising substitution with alkoxy, thioalkoxy, phthalimido, halogen, amino, keto, carboxyl, nitro, nitroso, cyano, trifluoromethyl, trifluoromethoxy, imidazole, azido, hydrazino, aminooxy, isocyanato, sulfoxide, sulfone, disulfide, silyl, heterocycle, carbocycle, an intercalator, a reporter group, a conjugate, a polyamine, a polyamide, a polyalkylene glycol, or a polyether of the formula (-O-alkyl)_m, where m is 1 to about 10; and R* is hydrogen, or a protecting group.

73. The composition of claim 62 wherein said chimeric oligomeric compound is 5'-hemimer.

74. The composition of claim 73 wherein said 5'-hemimer comprises a terminal RNA segment having nucleotides of a first type and a further RNA segment having nucleotides of a second type and where said nucleotides of said first type are different from said nucleotides of said second type.

75. The composition of claim 74 wherein each of said nucleotides of said first type independently including at least one sugar substituent;

said sugar substituent comprising halogen, amino, trifluoroalkyl, trifluoroalkoxy, azido, aminooxy, alkyl, alkenyl, alkynyl, O-, S-, or N(R*)-alkyl; O-, S-, or N(R*)-alkenyl; O-, S- or N(R*)-alkynyl; O-, S- or N-aryl, O-, S-, or N(R*)-aralkyl;

wherein said alkyl, alkenyl, alkynyl, aryl and aralkyl may be substituted or unsubstituted C₁ to C₁₀ alkyl, C₂ to C₁₀ alkenyl, C₂ to C₁₀ alkynyl, C₅-C₂₀ aryl or C₆-C₂₀ aralkyl; and said substituted C₁ to C₁₀ alkyl, C₂ to C₁₀ alkenyl, C₂ to C₁₀ alkynyl, C₅-C₂₀ aryl or C₆-C₂₀ aralkyl comprising

substitution with alkoxy, thioalkoxy, phthalimido, halogen, amino, keto, carboxyl, nitro, nitroso, cyano, trifluoromethyl, trifluoromethoxy, imidazole, azido, hydrazino, aminooxy, isocyanato, sulfoxide, sulfone, disulfide, silyl, heterocycle, carbocycle, an intercalator, a reporter group, a conjugate, a polyamine, a polyamide, a polyalkylene glycol, or a polyether of the formula $(-O-alkyl)_m$, where m is 1 to about 10; and R^* is hydrogen, or a protecting group.

76. The composition of claim 62 wherein the chimeric oligomeric compound comprises a blockmer.

77. The composition of claim 76 wherein said blockmer comprises an oligonucleotide having a block of at least two consecutive nucleotides of a first type located immediately adjacent at least one nucleotide of a second type and

where said nucleotides of said first type are different from said nucleotides of said second type.

78. The composition of claim 77 wherein each of said nucleotides of said first type independently including at least one sugar substituent;

said sugar substituent comprising halogen, amino, trifluoroalkyl, trifluoroalkoxy, azido, aminooxy, alkyl, alkenyl, alkynyl, O-, S-, or N(R^*)-alkyl; O-, S-, or N(R^*)-alkenyl; O-, S- or N(R^*)-alkynyl; O-, S- or N-aryl, O-, S-, or N(R^*)-aralkyl; wherein said alkyl, alkenyl, alkynyl, aryl and aralkyl may be substituted or unsubstituted C_1 to C_{10} alkyl, C_2 to C_{10} alkenyl, C_2 to C_{10} alkynyl, C_5 - C_{20} aryl or C_6 - C_{20} aralkyl; and said substituted C_1 to C_{10} alkyl, C_2 to C_{10} alkenyl, C_2 to C_{10} alkynyl, C_5 - C_{20} aryl or C_6 - C_{20} aralkyl comprising substitution with alkoxy, thioalkoxy, phthalimido, halogen, amino, keto, carboxyl, nitro, nitroso, cyano, trifluoromethyl, trifluoromethoxy, imidazole, azido, hydrazino, aminooxy, isocyanato, sulfoxide, sulfone, disulfide, silyl, heterocycle, carbocycle, an intercalator, a reporter group, a conjugate, a polyamine, a polyamide, a polyalkylene glycol, or a polyether of the formula $(-O-alkyl)_m$, where m is 1 to about 10; and R^* is hydrogen, or a protecting group.

79. The composition of claim 78 wherein said nucleotides of said of said second type comprise 2'-OH nucleotides.

80. The composition of claim 77 further including a plurality of blocks of at least two consecutive nucleotides of a first type and wherein each of said blocks of nucleotides of said first type is separated from others of said blocks of nucleotides of said first type by a nucleotide of said second type.

81. The composition of claim 62 wherein said chimeric oligomer compound comprises a gapmer of the formula PNA-RNA-PNA.

82. The composition of claim 68 wherein said chimeric oligomeric compound comprises a 5'-hemimer the formula PNA-RNA or a 3'-hemimer of the formula RNA-PNA.

83. The composition of claim 62 wherein said chimeric oligomeric compound comprises an inverted gapmer of the formula RNA-PNA-RNA.

84. The composition of claim 62 wherein the chimeric oligomeric compound is divided into at least two regions;

the first region comprising α -nucleosides linked by charged or neutral 3'-5' phosphorous linkages; α -nucleosides linked by charged or neutral 2'-5' phosphorous linkages; α -nucleosides linked by non-phosphorous linkages; 4'-thionucleosides linked by charged or neutral 3'-5' phosphorous linkages; 4'-thionucleosides linked by charged or neutral 2'-5' phosphorous linkages; 4'-thionucleosides linked by non-phosphorous linkages; carbocyclic-nucleosides linked by charged or neutral 3'-5' phosphorous linkages; carbocyclic-nucleosides linked by charged or neutral 2'-5' phosphorous linkages; carbocyclic-nucleosides linked by non-phosphorous linkages; β -nucleosides linked by charged or neutral 3'-5' linkages; β -nucleosides linked by charged or neutral 2'-5' linkages; or β -nucleosides linked by non-phosphorous linkages; and

the second region consists of 2'-ribo- β -nucleosides linked by charged 3'-5' phosphorous linkages.

85. The composition of claim 62 wherein the chimeric oligomeric compound is divided into at least two regions;

the first region comprising α -nucleosides linked by charged or neutral 3'-5' phosphorous linkages, α -nucleosides linked by charged or neutral 2'-5' phosphorous linkages, α -nucleosides

linked by non-phosphorous linkages, 4'-thionucleosides linked by charged or neutral 3'-5' phosphorous linkages, 4'-thionucleosides linked by charged or neutral 2'-5' phosphorous linkages, 4'-thionucleosides linked by non-phosphorous linkages, carbocyclic-nucleosides linked by charged or neutral phosphorous linkages, carbocyclic-nucleosides linked by non-phosphorous linkages, β -nucleosides linked by charged or neutral 3'-5' linkages, β -nucleosides linked by charged or neutral 2'-5' linkages, or β -nucleosides linked by non-phosphorous linkages; and the second region comprising nucleobases linked by non-phosphorous linkages or nucleobases that are attached to phosphate linkages via a non-sugar tethering moiety.

86. The composition of claim 62 wherein the chimeric oligomeric compound is divided into at least two regions;

the first region comprising nucleobases linked by non-phosphorous linkages and nucleobases that are attached to phosphate linkages via non-sugar tethering groups, and nucleosides selected from α -nucleosides linked by charged or neutral 3'-5' phosphorous linkages, α -nucleosides linked by charged or neutral 2'-5' phosphorous linkages, α -nucleosides linked by non-phosphorous linkages, 4'-thionucleosides linked by charged or neutral 3'-5' phosphorous linkages, 4'-thionucleosides linked by charged or neutral 2'-5' phosphorous linkages, 4'-thionucleosides linked by non-phosphorous linkages, carbocyclic-nucleosides linked by charged or neutral 3'-5' phosphorous linkages, carbocyclic-nucleosides linked by charged or neutral 2'-5' phosphorous linkages, carbocyclic-nucleosides linked by non-phosphorous linkages, β -nucleosides linked by charged or neutral 3'-5' linkages; β -nucleosides linked by charged or neutral 2'-5' linkages, or β -nucleosides linked by non-phosphorous linkages; and

the second region comprising 2'-ribo- β -nucleosides linked by charged 3'-5' phosphorous linkages wherein the 3'-5' phosphorous linkages.

87. The composition of claim 62 comprising at least two segments, wherein at least one segment comprises non-naturally occurring internucleoside linkages.

88. The composition of claim 53 wherein the chimeric oligomeric compound comprises an oligomer mimetic.

89. The composition of claim 65 wherein said nucleotides of said first type comprise nucleotides having a 2' halogen sugar substituent and said halogen is F.

90. The composition of claim 65 said nucleotides of said first type comprise nucleotides having a 2' O-alkyl sugar substituent and wherein said -O-alkyl is -O-CH₃.

91. The composition of claim 65 said nucleotides of said first type comprise nucleotides having a 2' sugar substituent and where said 2' sugar substituent is of the formula -X-Y, wherein:

X is O, S, NR^{**}, or CR^{*} wherein each R^{**} is independently H or C₁₋₆ alkyl; and

Y is substituted or unsubstituted C₁₋₂₀ alkyl, substituted or unsubstituted C₂₋₂₀ alkenyl, or substituted or unsubstituted C₆₋₂₀ aryl.

92. The composition of claim 68 wherein said nucleotides of said first type comprise nucleotides having a 2' halogen sugar substituent and said halogen is F.

93. The composition of claim 68 said nucleotides of said first type comprise nucleotides having a 2' O-alkyl sugar substituent and wherein said -O-alkyl is -O-CH₃.

94. The composition of claim 68 said nucleotides of said first type comprise nucleotides having a 2' sugar substituent and where said 2' sugar substituent is of the formula -X-Y, wherein:

X is O, S, NR^{**}, or CR^{*} wherein each R^{**} is independently H or C₁₋₆ alkyl; and

Y is substituted or unsubstituted C₁₋₂₀ alkyl, substituted or unsubstituted C₂₋₂₀ alkenyl, or substituted or unsubstituted C₆₋₂₀ aryl.

95. The composition of claim 71 wherein said nucleotides of said first type comprise nucleotides having a 2' halogen sugar substituent and said halogen is F.

96. The composition of claim 71 said nucleotides of said first type comprise nucleotides having a 2' O-alkyl sugar substituent and said -O-alkyl is -O-CH₃.

97. The composition of claim 71 said nucleotides of said first type comprise nucleotides having a 2' sugar substituent and where said 2' sugar substituent is of the formula $-X-Y$, wherein:

X is O, S, NR^{**} , or CR^* wherein each R^{**} is independently H or C_{1-6} alkyl; and

Y is substituted or unsubstituted C_{1-20} alkyl, substituted or unsubstituted C_{2-20} alkenyl, or substituted or unsubstituted C_{6-20} aryl.

98. The composition of claim 74 wherein said nucleotides of said first type comprise nucleotides having a 2' halogen sugar substituent and said halogen is F.

99. The composition of claim 74 said nucleotides of said first type comprise nucleotides having a 2' O-alkyl sugar substituent and said -O-alkyl is $-O-CH_3$.

100. The composition of claim 74 said nucleotides of said first type comprise nucleotides having a 2' sugar substituent and where said 2' sugar substituent is of the formula $-X-Y$, wherein:

X is O, S, NR^{**} , or CR^* wherein each R^{**} is independently H or C_{1-6} alkyl; and

Y is substituted or unsubstituted C_{1-20} alkyl, substituted or unsubstituted C_{2-20} alkenyl, or substituted or unsubstituted C_{6-20} aryl.

101. The composition of claim 77 wherein said nucleotides of said first type comprise nucleotides having a 2' halogen sugar substituent and said halogen is F.

102. The composition of claim 77 said nucleotides of said first type comprise nucleotides having a 2' O-alkyl sugar substituent and said -O-alkyl is $-O-CH_3$.

103. The composition of claim 77 said nucleotides of said first type comprise nucleotides having a 2' sugar substituent and where said 2' sugar substituent is of the formula $-X-Y$, wherein:

X is O, S, NR^{**} , or CR^* wherein each R^{**} is independently H or C_{1-6} alkyl; and

Y is substituted or unsubstituted C_{1-20} alkyl, substituted or unsubstituted C_{2-20} alkenyl, or substituted or unsubstituted C_{6-20} aryl.

104. An oligomer having at least a first region and a second region, wherein

said first region of said oligomer is complementary to and capable of hybridizing with said second region of said oligomer,

at least a portion of said oligomer is complementary to and capable of hybridizing to a selected target nucleic acid, and

at least one of said first or said second oligomers is a chimeric oligomeric compound.

105. The oligomer of claim 104 wherein each of said first and said second regions has at least 10 nucleotides.

106. The oligomer of claim 104 wherein said first region in a 5' to 3' direction is complementary to said second region in a 3' to 5' direction.

107. The oligomer of claim 104 wherein said oligomer includes a hairpin structure.

108. The oligomer of claim 104 wherein said first region of said oligomer is spaced from said second region of said oligomer by a third region and where said third region comprises at least two nucleotides.

109. The oligomer of claim 104 wherein said first region of said oligomer is spaced from said second region of said oligomer by a third region and where said third region comprises a non-nucleotide region.

110. A pharmaceutical composition comprising the composition of claim 1 and a pharmaceutically acceptable carrier.

111. A pharmaceutical composition comprising the composition of claim 53 and a pharmaceutically acceptable carrier.

112. A pharmaceutical composition comprising the oligomeric compound of claim 104 and a pharmaceutically acceptable carrier.

113. A method of modulating the expression of a target nucleic acid in a cell comprising contacting said cell with a composition of claim 1.

114. A method of modulating the expression of a target nucleic acid in a cell comprising contacting said cell with a composition of claim 53.

115. A method of modulating the expression of a target nucleic acid in a cell comprising contacting said cell with an oligomeric compound of claim 104.

116. A method of treating or preventing a disease or disorder associated with a target nucleic acid comprising administering to an animal having or predisposed to said disease or disorder a therapeutically effective amount of a composition of claim 1.

117. A method of treating or preventing a disease or disorder associated with a target nucleic acid comprising administering to an animal having or predisposed to said disease or disorder a therapeutically effective amount of a composition of claim 53.

118. A method of treating or preventing a disease or disorder associated with a target nucleic acid comprising administering to an animal having or predisposed to said disease or disorder a therapeutically effective amount of a composition of claim 104.